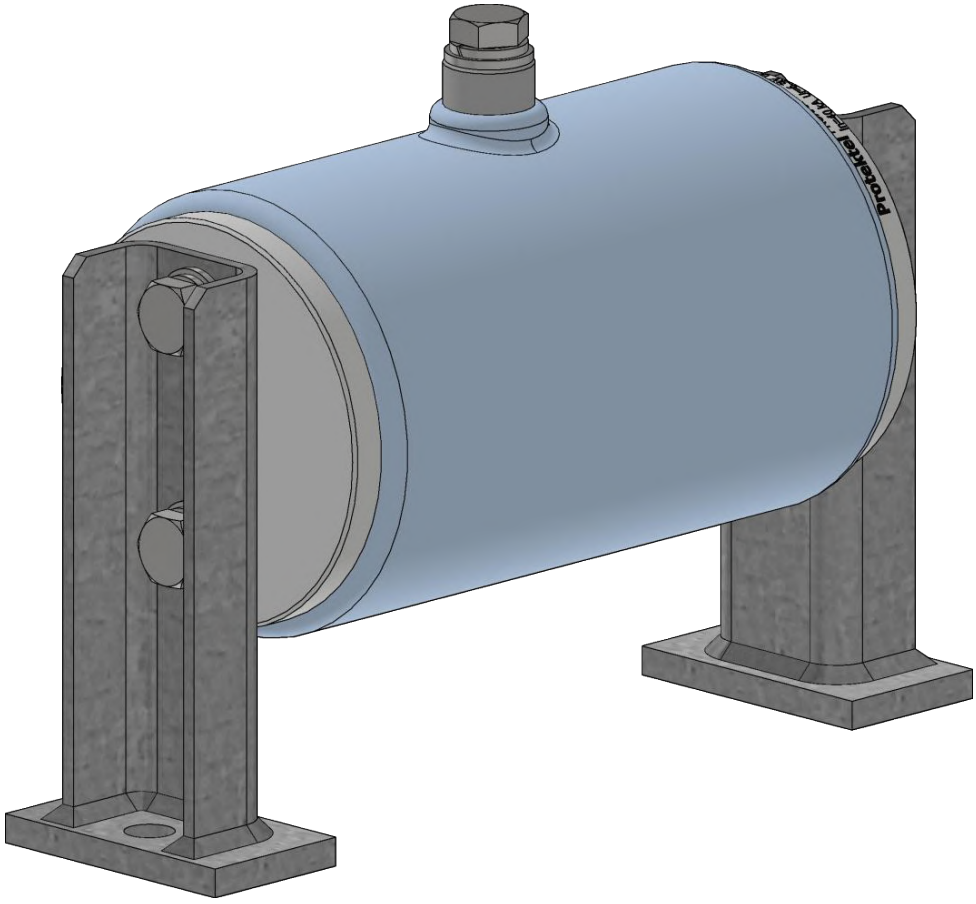
INSTALLATION AND OPERATING MANUAL FOR PROXAR-VW DC TYPE SURGE ARRESTERS



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1. GENERAL INFORMATION

Dear customer, thank you for choosing our product - the surge arrester type PROXAR-VW DC. Please read the operating manual before starting the installation. The manufacturer assumes no responsibility for incorrect installation of the product.

This manual does not cover all contingencies relating to the installation and operation manual for the arresters. If problems arise that are not covered in this manual, please contact the manufacturer. The described type of surge arresters are designed to be installed by qualified personnel with the required practice in the field of safety devices of high and medium voltage. These guidelines are drafted for such personnel and are not a substitute for proper training and experience in the safe operation of this type of devices.

WARNING

Any work on the surge arresters should be carried out on disconnected and grounded device. Follow all the rules and principles of international and national safety and health at work.

2. DESCRIPTION OF THE PRODUCT

Surge arresters type PROXAR-VW DC are single-phase devices, designed to work indoors. The role of surge arresters is protection against over voltage by bringing it to the ground and reducing it. This allows other devices connected to the network are safely protected from the effects of each type of overvoltage.

The stack of varistors is placed in parallel in a composite support structure and closed in it on both sides with electrodes made of aluminum. The correct electrical connection of the varistors with the electrodes is possible thanks to the appropriate clamp. The housing is made of polymer silicone with very good electrical insulating properties (the housing is made using direct silicone injection technology on the interior of the arrester).

3. ELECTRICAL DETAILS

Line discharge class according to EN 50526-1: 2012	DC-C
Line discharge class according to IEC 60099-4: 2009	5
System voltage (Un_{DC})	3 kV
Continuous operating voltage (Uc_{DC})	4.5 – 5.0 kV
Nominal discharge current In 8/20 μs	40 kA
High current impulse Ihc 4/10 μs	300 kA
Long duration current impulse, 2000 μs	2700 A*
Energy absorption capability, 2 impulses	21 kJ/kV of Uc dc*
Service conditions:	
- temperature	-40 °C do +40 °C*
- altitude up to	1000 m
Creepage distance	92 mm
Weight	9.0 kg

*) For higher values please contact with manufacturer.

Table 1. **ELECTRICAL DATA**

Type PROXAR–VW DC	Continuous operating voltage (DC) Uc	Residual voltage in kV pk at a specified impulse current							
		Wave 1/… μs	Wave 8/20 μs				Wave 30/60 μs		
		40kA	10kA	20kA	40kA	80kA	1kA	2kA	4kA
	kV	kV	kV	kV	kV	kV	kV	kV	kV
4.5	4.5	12.80	10.60	11.20	12.00	13.00	9.00	9,50	10.00
4.7	4.7	13.25	11.10	11.70	12.50	13.60	9.70	10.00	10.50
5.0	5.0	13.80	11.60	12.20	13.00	14.10	10.10	10.50	11.00

Note: It is possible to make PROXAR-VW DC surge arrester with a different range of continuous operating voltage.

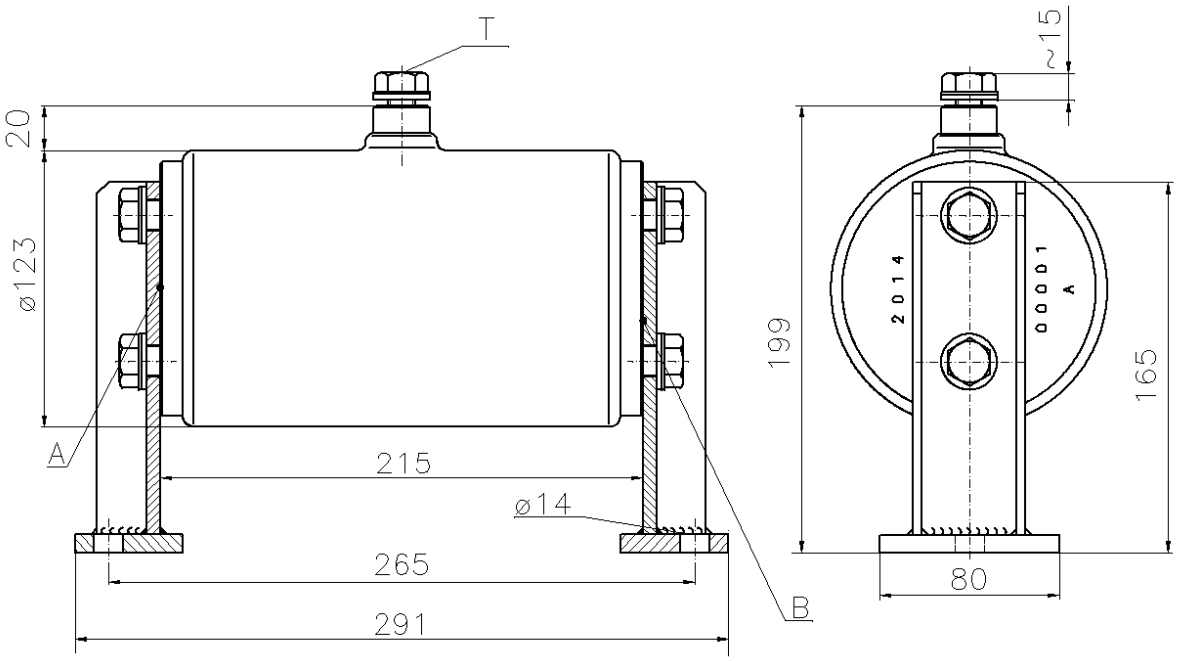

Fig.1. Draw with dimensions of surge arrester PROXAR-VW DC

Table 2. **TECHNICAL DATA FOR HAUSING**

TYPE PROXAR–VW DC	External insulation		Minimal distances	
	DC voltage wet (60s)	1.2/50 µs dry	Between the axis of surge arrester and return path structure „a”	Between the highest place of line terminal and return path structure „b”
	kV	kV	mm	mm
4.5	15	40	150	100
4.7	15	40	150	100
5.0	15	40	150	100
			Minimal creepage distance	92 mm
			Weight	ok. 9,0 kg

4. TRANSPORTATION, COLLECTION AND STORAGE

Surge arresters are supplied in strong individual cardboard packages, which are packed in collective cartons or packed on pallets. Upon receipt, check the number and completeness of the arresters. Store in a dry and ventilated place, free from corrosive agents. Follow the instructions on the cartons. Cartons can be stacked on top of each other up to a maximum of 3 layers

5. INSTALATION

If damage was found during unloading or unpacking please do not hesitate to contact with the manufacturer.
Before final installation, check that the product is correct (type designation, Ur - rated voltage, Uc - continuous operating voltage, type of voltage system DC – direct current, In – nominal discharge current, etc.). If in doubt about the appropriate model, please consult with the manufacturer's technical department (+48 29 752 57 84).
The method of assembling and tightening torques of screw connections are shown in Figure "Figure mounting surge arresters type PROXAR-VW DC", which is always attached to each batch of surge arresters. For screw connections used to be typical assembly tools in the form of keys and sockets using the torque wrench.
Tightening torques of screw connections:
M12 – 25 Nm
Table 2 and Figure No 2 show the recommended minimum distances that should be maintained during installation of arresters. These are the minimum distance between the axles of surge arrester and between the nearest return path structure.

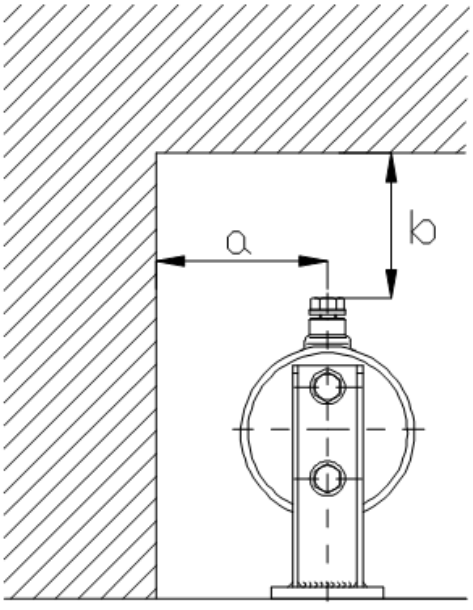

Fig.2. Minimal mounting distances for surge arrester.

6. ELECTRICAL CONNECTIONS

It is recommended to install arresters as close as possible in relation to the protected equipment, moreover, observe the rules for the shortest possible cable connections and ground connectors for better protection of surge arresters. Connections not need be insulated unless the infrastructure requires the use of insulation. See Table 2, where they are given the minimum distance surge arrester from the return path structure.
First of all, make sure to perform a reliable return path connection/ and then connect the surge arrester to the line. It is required that all installation works were carried out in a non-voltage protected system. The minimum section of the line conductor should be: Cu – 95 mm^2; Al – 150 mm^2.

First of all, make sure to perform a reliable grounding connection to both outputs of surge arrester to common return path (If one of outputs A or B will be free it will be worst technical parameters of surge arrester what can lead to accelerated damage of surge arrester). After that connect the surge arrester to line cable.

In the case when the arrester is installed under tension, must be strictly followed safety guidelines for this type of work.

NOTE: Improper installation will void the warranty on the product.

7. DISASSEMBLY

When dismantling the arrester, make sure that the voltage supplied to the arrester terminal has been effectively disconnected. The line terminal must be disconnected from the line cable first. It is required that all dismantling work is performed in a voltage-free state of the protected system. During dismantling, the same safety rules as when installing the arrester must be observed.

8. OPERATION

Surge arresters type PROXAR-VW DC does not require any particular maintenance. Sufficient periodic inspection, under the inspection of other devices operating in the installation of arresters.
PROXAR surge arresters do not require cleaning of the external surface of the insulating housing during the entire period of operation. The insulating surface may appear dirty, but this does not affect the operation of the surge arrester. However, if the surge arrester were to be washed, then in addition to the usual precautions, the following should be taken into account:
- due to the soft structure of silicone insulation, do not use high-pressure water, which may damage the surface of the insulator
- use "soft" clean water without added detergents

9. IDENTIFICATION OF THE RATING PLATE

The nameplate is shown below in Figure 3. Description made by the micro point method:
1. Year of production
2. Serial number
3. The manufacturer's name
4. Product name
5. Basic rated parameters
6. Rated voltage Ur and the continuous operating voltage Uc in [kV]
7. Name of electrodes

A – nominal voltage for example **4.5**
B – continuous operating voltage for example **4.5**
C – intended for DC system **DC**

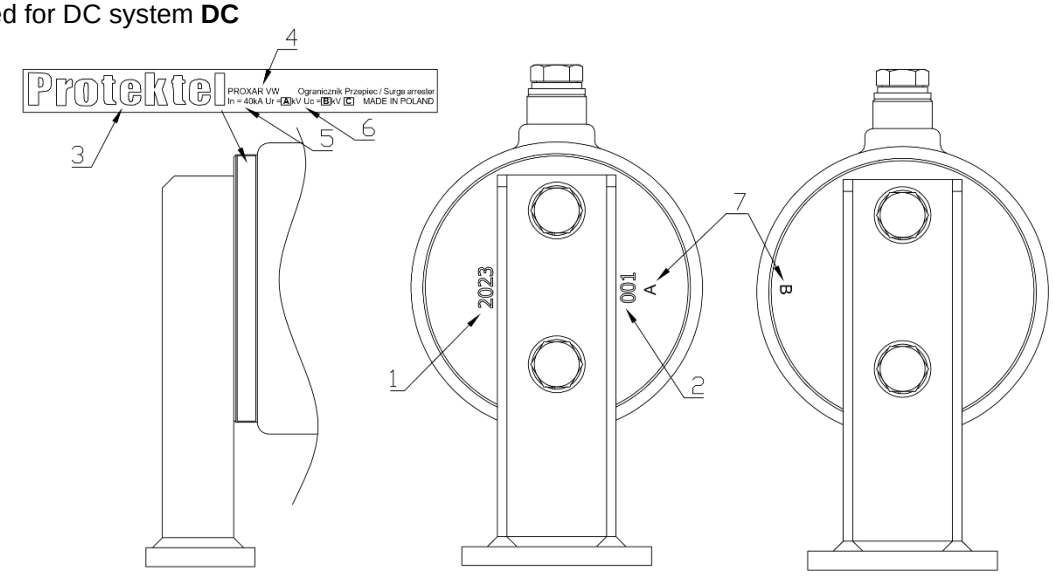

Fig.3. Nameplate for surge arrester type PROXAR-VW DC

10. DISPOSAL OF WASTE PRODUCT - SCRAPING

Surge arrester type PROXAR-VW DC are environmentally friendly but must be disposed of in accordance with local requirements in an environmentally friendly manner. Materials as far as possible should be recycled.

List of materials included in the arrester:

1. Silicone rubber
2. Aluminum
3. Ceramics - varistors based on zinc oxide
4. Glass fiber composite
5. Steel

The materials used for the production of the surge arresters does not pose a threat to human life and health.

11. AFTER-SALES SERVICE

In case the product is not delivered in good condition or would cause problems with the installation or during operation, please contact:

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